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ABSTRACT

Issues in making small-group instruction effective are addressed in this theme issue, which focuses on an approach called Complex Instruction (CI). Developed by Elizabeth Cohen at Stanford University (California), the approach is designed for middle school students in heterogeneous classes. The program is based on four goals to help teachers foster high level interactions among students: (1) bolster students of low status by identifying multiple abilities; (2) raise the expectations for student competence; (3) develop student responsibility for each others' performance and learning; and (4) promote higher order thinking. This document includes a summary of Cohen and Cazden's forthcoming review of research literature on small groups; a report on two middle-grade classrooms who use the program; and an interview with a staff developer who helps teachers implement the program. Cohen's work concentrates on the challenge of using small groups to develop higher-order thinking in heterogeneous classrooms where status differences between high and low performing students usually pose problems for teachers and students. Nine sources for further reading are provided. (14 references) (LMI)

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Issues
in restructuring schools

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Making Small Groups Productive

Today's lesson is on the Crusades. One crusade known to students who go through middle school is that of Christians marching in triumph over infidels. Another movement, going on behind the scenes, is for improved methods of small group instruction.

Small group instruction is not new. In fact, cooperative learning has been practiced and studied in the United States for more than twenty years. Research shows that with well-designed small groups, both academic and social skills improve significantly—even with the most challenging students. After two decades, small groupwork is now experiencing the wide-spread implementation researchers support.

In cooperative learning, students interact in a group small enough that all can participate in a collective task. Thinking processes can vary from routine—mastery of basic skills, to abstract—investigation of complex problems with no definite answer. However, a key target for cooperative learning is the promotion of higher level discourse and higher order thinking.

There are several approaches to cooperative learning. We focus here on an approach called Complex Instruction (CI), developed by Elizabeth Cohen at Stanford University, and designed for middle school students in heterogeneous classes. CI requires that teachers foster high level interactions among students, not to simply transfer a set of information. At Stanford, teachers train for two weeks in the theory and practice of CI, have follow up sessions by staff developers in their classrooms through the year, and reconvene for a one-day review workshop. The following four goals of CI influence the practice of teaching and advance the broader agenda for school restructuring:

Bolster students of low status by identifying multiple abilities.
Any of several conditions can brand a student as low status, including language accent, ethnic appearance, lower socio-economic background, perceived reading and academic ability. Such students often experience rejection of their ideas, or exclusion from the group project. As their interactions within the group decline, their intellectual development is hampered. The teacher can point out that completion of the group task requires multiple abilities not vested in any one individual, and that every individual will be good at something.

If students believe that the group requires the capabilities of all, then low status students will be brought into the interactions. The students will seek contributions from each other, and expectations will be raised by healthy peer pressure rather than demands by the teacher.

Raise the expectations for competence.
The teacher can reverse negative perceptions by acknowledging the capabilities of a low status student to the group. Since students tend to trust their teacher's evaluations,

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ISSUE REPORT NO. 2
SPRING 1992

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Director's Introduction

How should classrooms be "restructured" to improve instruction? Teachers and researchers know that in many situations the prevailing structure of whole class instruction, what John Goodlad called "frontal" teaching, just doesn't work. A promising possibility, pursued in thousands of schools, is to have students spend more time in small groups. But merely assigning students to work in small groups is no panacea. This *Issue Report* discusses how to make small groups effective.

Why don't students seem to learn when the teacher stands at the front of a class and tries to communicate with all students simultaneously, by transmitting information and instructions, or quizzing them and leading discussions? One explanation is individual differences: students come to class with so many different motivations, abilities, styles of learning, and histories of prior knowledge that a lesson presented in a single format, at the same pace for all, fails to get across to many students.

Research offers further explanation for the shortcomings of whole class frontal instruction. Researchers have discovered that learning is an active process in which the student needs an opportunity to use, to experiment or try out, to play with, to make sense of new knowledge. For most students this cognitive activity will not occur just by listening, reading, or viewing, and then being called upon to give back what was said by the teacher, text, or video. Instead, students need sustained opportunities to apply and express knowledge in their own words, drawings, or other activities. Second, in order to process knowledge productively, most students need reactions and feedback to their individual work. Constructive individual feedback is critical not simply to certify the level of student success, but more importantly, to stimulate mental activity in processing and making sense of knowledge. Since most individuals have great difficulty generating within themselves the kind of critical conversation needed to stimulate further inquiry, if they are to learn, they need meaningful interaction with a teacher or peers about progress in their work. The problem is that for most students whole class instruction offers no opportunity to work actively with knowledge in a sustained way, and no opportunity for individualized feedback.

Well-designed small groups have the potential to solve both of these problems and they have other advantages too.

- With appropriate tasks and enough flexibility in use of time and resources, small groups afford all students the opportunity to work with knowledge actively–through writing, talking, dramatization.
- Small groups increase opportunities for feedback on individual work from peers and from the teacher who can circulate throughout the class and give sustained attention to specific groups and students.
- Small groups offer a motivational boost, because they situate learning in a social setting that many students find more satisfying than working alone.
- In addition to cognitive objectives, small groups offer opportunities to pursue affective and social goals such as building student respect for individual and cultural diversity and developing cooperative social skills.

But like other interventions (e.g. block scheduling, team teaching, core curriculum, charter schools, abolition of tracking, school choice), the general idea of groupwork, however sensible, offers no assurance that any of its theoretical potential will be fulfilled. If poorly designed, small group activities can decrease students' engagement, their understanding of the subject, and their respect for peers. The question then, is, "What are the conditions under which small groupwork will maximize its theoretical potential in achieving specific educational goals?"

Under the banner of "cooperative learning," a host of researchers, teachers, curriculum specialists and staff developers have been working on this question for many years. There are several interpretations of the term, but the obvious implication–that students should help one another to learn–reflects the need for active processing and individual feedback so absent in the typicial whole-class lesson.

Diverse approaches to research and program development within the cooperative learning movement have raised several issues. The most fundamental is, "What are the essential goals or reasons for students working in small groups?" Goals for cognitive learning can include memorization of factual information, learning how to apply algorithms, and solving complex higher order tasks. Basic skills goals include learning how to use a library, outlining and taking notes, working with computers. Some teachers use small groups primarily for affective goals, especially to build individual self-esteem, to nurture respect for different racial, ethnic, cultural, and economic groups, and to develop a cooperative ethic. If small groups are to be effective in accomplishing such diverse goals, then the work must be structured specifically with the goals in mind.

Once the goals are clear, issues such as the following need to be considered in designing the groups' work:

- To what extent does the goal require collective action, such as production of a group product or performance to which all students contribute, in contrast, for example, to individuals producing their own work with the help of peers?
- How will student differences in motivation and ability be handled within groups so as to insure that all students have opportunity to participate and to learn? Realizing that in any group, some members will work harder and contribute more than others, to what extent should this problem be minimized through homogeneous vs heterogeneous grouping, and can individual differences within heterogeneous groups best be handled?
- What incentives and assessment procedures will be used to maximize student engagement and learning? Will groups compete? Will individuals be held accountable for their own performance and their contribution to the group effort? How will grades be awarded?

◆ Does successful execution of the group task first require specific training for students to perform roles for which they may have little competence (e.g. summarizing discussion, keeping a group on track, making an oral report)?

◆ Finally, how can the teacher interact with students most effectively? A common role for the teacher is to act as a roving resource, interacting with students as an apparent need arises. This often involves brief exchanges to keep students on task or to raise provocative questions, but without taking time to teach the subject in a Socratic or seminar style. Teachers and researchers have noted that pedagogy of this sort can deprive students of powerful intellectual interaction. How can teachers develop pedagogy that allows them to interject substantive expertise into the group conversations while at the same time allowing students to construct knowledge in their own terms?

This *Issue Report* addresses some of these matters by focusing on the work of Elizabeth Cohen and her colleagues at Stanford University, home of their Program in Complex Instruction. We include a summary of Cohen and Cazden's forthcoming review of the research literature on small groups; a report on two middle grade classrooms who use the program; and an interview with Patty Swanson, a staff developer who helps teachers to implement the program.

The field of cooperative learning includes a variety of emphases. Cohen's work concentrates on the challenge of using small groups to develop higher order thinking in heterogeneous classrooms where status differences between high and low performing students (often associated with race, ethnicity, class and gender) usually pose major problems for teachers and students alike. Other approaches to cooperative learning define the central issues and their programmatic solutions differently. Alternative approaches that have also developed a research base on the use of small groups include the work of Robert Slavin, Johns Hopkins University, David and Roger Johnson, University of Minnesota, and Shlomo Sharan and Yael Sharan, University of Tel Aviv. (For further reading, see back page.) ◆

Fred M. Newmann, Director

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they begin to believe in the potential of their previously ignored peers.

Develop student responsibility for each others' performance and learning. If the student tasks are interdependent, each will bear some responsibility for the success of others. One technique to foster such interaction is to assign roles to different students, such as facilitator, harmonizer, reporter. In order for a student to fulfill one of these roles, the student must assume some responsibility for the performance of others.

Promote higher order thinking. A main purpose of CI, promoting higher order thinking requires selection of appropriate tasks for the group. The teacher must choose topics and tasks which are open-ended, perhaps uncertain and complex. The activity must require multiple input, points of view, and high level interactions.

In this issue, we visit the classrooms of two social studies teachers in California who trained in CI. In each case we observe an adaptation of the essential elements of the theory; each uses techniques designed to engage students and promote higher level thinking and social skills. We illustrate how their teaching reflects the goals of CI.

A group discusses the U.S. amendments

Bolstering low status by identifying multiple abilities

The classroom at Steinbeck Middle School in San Jose, California shows the unmistakable signs of American social studies. Models of Philadelphia's Independence Hall dot side tables under life-size wall hangings of George Washington and Paul Revere in revolutionary war garb. Photographs of students posed in front of the Capitol in Washington, D.C. stand in sharp contrast to the rolling green foothills of the Silicon Valley. National statistics may decry American students' lack of knowledge of the Bill of Rights, but Compton's kids just may refute the findings. Bruce Compton, eighth

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Restructuring the Classroom: Conditions for Productive Small Groups

By Elizabeth G. Cohen

Cooperative learning in small groups embodies many of the social and academic goals of school restructuring. Its advantages have been trumpeted for decades, and it has gained increasing acceptance worldwide as a means to enhance achievement on both basic skills and higher order thinking, and to promote productive social behavior and improve racial and ethnic harmony. Cooperative learning also presents a method for managing a class or group with a wide range of academic achievement such as those found in untracked schools.

Early research on cooperative learning yielded apparently conflicting results. In some studies, group learning was observed to substantially improve achievement and social relations, whereas in others, the results on achievement tests were no different from those in traditional instruction. These varied results suggest that the advantages of cooperative learning might be realized only under certain conditions. However, research that compared cooperative instructional methods to non-cooperative methods on outcomes alone without examining what was happening in the interaction of group members could not reveal just what these critical conditions were.

In the past decade, research has gone beyond this approach to concentrate on the effects of changing various features of cooperative learning so as to highlight the importance of particular conditions for success on different kinds of instructional outcomes. This research can help teachers devise cooperative learning activities with the conditions chosen to produce desired learning goals.

Both researchers and practitioners would do well to focus directly on the type of interaction that is desired. There is, for example, a major difference between the type of interaction useful for the more routine types of academic learning and the type of interaction desired when the objective is learning for understanding or conceptual learning. For more routine learning, students should help each other to understand what the teacher or the textbook is saying and should offer each other substantive and procedural information. For conceptual learning, the interaction desired is more of a mutual exchange process in which ideas, hypotheses, strategies and speculation are shared. The main challenge for teachers is to stimulate the type of interaction desired according to their teaching objective. Courtney Cazden of Harvard University and I have recently synthesized research findings. The results, summarized here, have major implications for teachers of small groups, and for principals, staff developers, and district administrators.

What is a Cooperative Learning Group?

In a cooperative learning group students work together in a group small enough so that everyone can participate on a task that has been clearly assigned. Students are expected to carry out their task without direct and immediate supervision of the teacher. The level of learning involved can vary from routine to abstract; however, cooperative learning groups are often promoted to facilitate higher level discourse and higher order thinking. They can also be used to foster general cooperative behavior and equal-status interaction between students who differ in status due to income, ethnicity, race or perceived ability. Cooperative learning groups contrast with traditional individualistic instruction. The teacher of a small cooperative group plays quite a different role than usual, giving direction to new patterns of interaction among students.

Student Interactions

Theorists of group interaction in classrooms differ as to how explicit and rational discourse should be for productive small groups. The social constructivists have documented how groups negotiate meaning moment by moment while others see effective cooperative learning as an explicit strategy in which groups must manage the process of problem solving with conscious planning and execution of tasks. Researchers who have actually recorded interaction within cooperative learning groups have often been disappointed by what they have heard. For example, in the de-bugging of computer programs, students with no preparation in group interactions, interact only at the level of line-by-line debugging, with little discourse on the overall strategy or logic of the program. [1] Observers have also witnessed interpersonal processes that are anything but cooperative among untrained participants in "cooperative learning."

Our review of studies of interaction suggest this useful generalization: If students are not taught differently, they will tend to operate at the most concrete level. If teachers want high-level operation, particularly verbal, the students will require specific development of skills for discourse, either in advance of cooperative learning or through direct assistance when the groups are in operation. In addition, since interpersonal skills do not develop as an automatic consequence of being placed in cooperative settings, something must be done in the way of deliberate skills building or through special motivational devices to produce the desired behaviors.

Interaction and Achievement

If group learning is beneficial, then one would expect achievement to increase as student interaction increases. But Webb's reviews of a large

body of meticulously conducted studies indicate that the simple frequency of interaction of individuals does not predict their achievement.[2] In contrast to this body of work, stand a number of studies conducted on complex instruction in multilingual elementary classrooms where interaction consistently predicts gains on standardized achievement tests whether at the individual or classroom level.[3]

One explanation of these differences is that groups which did not benefit from interactions were not given authentic "group tasks." A group task has two characteristics. First, it requires the resources (information, skills, materials) that no single person possesses; success on the task requires the contribution of many. Some of the groups where interaction was not beneficial involved straightforward math exercises which did not require collective action. Second, there must be interdependence, and the interdependence between students must be reciprocal. An interdependence in which better students always aid weaker students is a one-way dependence. Interdependence is reciprocal if each student is dependent on the contributions of all others. We hypothesize that only when there is a group task requiring such mutual interchange, will interaction become a direct predictor of productivity, e.g. learning gains.

If the problem given to the group is more routine and amenable to cookbook solutions, collaborating may be unnecessary for some individuals. In contrast, groups which deal with ill-structured, non-routine, discovery-oriented tasks become more productive as interactions increase because mutual interchange is a necessary condition for solving the problem.

Whether or not interaction is directly related to achievement, designers of cooperative learning all have to contend with the problem of how to motivate students to interact as a group. Especially if each individual must turn out some kind of worksheet or report, students may well ignore each other and tackle the task as individual work despite the teacher's instructions to work together and to help each other. This is why it is commonly recommended that the task instructions make the students interdependent, either through using each other as resources (resource interdependence) or through working towards a mutual goal (goal interdependence). According to our analysis, the effects of resource and goal interdependence on productivity will depend on how well these task arrangements stimulate interaction. By themselves, neither is sufficient to motivate group members to participate.[4]

One way to persuade group members to assist those in need of help is to make a group reward contingent on the performance of individual members. Based on extensive research and reviews of research, Slavin has made the strong assertion that cooperative learning results in reliable achievement gains only through a combination of group rewards (reward interdependence) and individual accountability.[5] Many of his own and other studies have documented the enhancement of individual achievement through rewarding pupils as a group. No aspect of cooperative learning has been as controversial as the issue of giving rewards to competitive groups. The issue relates to the ideological controversy of cooperation versus competition, and intrinsic versus extrinsic rewards. In Slavin's well-known technique of STAD (Student Teams-Achievement Division), individual accountability is just as important as the use of group rewards; students are held accountable by having to prepare individual work and having to take an individual test. At the same time the group is held accountable by being given a group score after the test based on the improvement of each individual over the last test score.

The effectiveness of these group rewards, however, should not be taken to mean that it is not possible to hold individuals accountable or to motivate them to participate without such rewards. Such rewards are not used in either the Sharans' Group Investigation technique that produced superior results to STAD on items measuring higher order thinking, nor are they used for complex instruction where the activities are intrinsically interesting and have also been shown to be effective in raising scores on measures of achievement.[6] Slavin's original proposition would appear to apply better to more routine learning and to the kinds of collective or collaborative seatwork tasks that are so common in cooperative learning. In those situations, it is of vital importance to motivate those who could do the task by themselves to assist those who are having difficulty.

Structuring the Interaction

We found considerable research on the relative effectiveness of structuring the interaction within small groups by telling students what to say, providing them with explicit roles, or by teaching them strategies for discussion. We propose that the effectiveness of structuring the interaction will depend on the complexity and uncertainty of the task and on whether or not the instructions attempt to micromanage the process of thinking and talking within the groups. If the task is to apply concepts and procedures in a relatively routine fashion (such as applying straightforward map skills) or simply to understand a reading assignment, then scripting the interaction has been shown to be very effective. For example, in a paired interaction in which they are required to synopsize some presented material, one student can be designated as the "learning leader" and one as the "learning listener." The leader summarizes and restates the main points of the material, and the listener asks probing questions, encourages improved explanations, and inserts omitted information.[7]

This format is useful for learning to recall information and basic definitions, that is, lower order skills. As the tasks become more sophisticated,

Students find their role assignments for small groupwork

requiring higher order thinking for more creative outcomes, we hypothesize that the interactions must be less constrained by the teacher. The students need more freedom to define problems and to construct knowledge independently. As the task objectives increase in cognitive complexity, task arrangements and instruction should foster more conceptual and elaborate discussions.

This proposition should not be taken to mean that minimal procedures or task instructions work best in fostering elaborated discourse. On the contrary, elaborate procedures and roles have been shown to foster higher level discourse. For example, the technique of constructive controversy has been shown to foster high-level discussion leading to conceptual understanding with elaborate procedures and the use of student roles.[8] A four-person group is divided into two pairs, with each pair assigned to espouse one side of an issue in a discussion. Within the pairs each person deals with different information relevant to his or her role or position in the controversy. Then the sides switch. Finally, the full group constructs a consensus viewpoint and expresses it in a report. This format aids the student in taking multiple perspectives as measured by achievement tests and is markedly superior to simply asking groups to discuss the controversy and to come to consensus.

Although roles given to students clearly structure the interaction, they can either constrain or facilitate high level discourse. If roles are used to divide labor, e.g. artist, writer, the result may be very little interaction of any kind as students go about their jobs. In contrast, Ehrlich found that a reporter role can be used to foster reciprocal interdependence resulting in significantly higher rates of scientific behaviors such as observing and inferring on a criterion task.[9] In this case, the reporter prompted the group members to specify their predictions for the experiment, to elaborate their reasoning and to pinpoint differences between their predictions and observations.

Insuring Equity in Interaction

Of course, all group members will not make equal contributions. Those perceived by the group to have more academic ability or those who are more popular usually interact more frequently and are more influential.[10] The result is that the low status members gain less from the group, and the group suffers from the absence of their contribution. The difference in social status can also arise from race, ethnicity, or gender. Expectations for competence based on status can result in self-fulfilling prophecies. Students who are viewed as having low status will often participate less because they are expected to be less competent and because they expect themselves to be less competent. As a result, they will appear to be less capable to themselves and others during cooperative learning. Collective tasks actually activate expectations for competence and incompetence based on difference in status.

Teachers can alter these expectations for competence. For example, they can convince students that many different abilities are relevant to the cooperative learning tasks and that each person will be competent on at least one ability while no one person will be competent at all the required abilities. Research has shown that it is possible for teachers to treat these status problems in regular classrooms so that low status students participate more frequently and so that there are few differences in interaction in the classroom between high and low status students during the operation of the small groups.[11]

Managing the Interaction

Although group tasks diminish teachers' control over the specific directions of classroom discourse, the teacher is no less influential to the learning process than in the traditional setting. It is quite a challenge for the teacher to guide and insure the effectiveness of the group without direct supervision. This is accomplished by building students' skills in discourse, by assigning well-chosen tasks for the groups, and by holding students accountable as individuals and as groups. The teacher does not instruct each group in its activity, but must delegate authority to the students. Research on complex instruction shows that direct instruction while the groups are in operation cuts down on student interaction and thereby restricts gains in learning outcomes.[12]

Many developers of cooperative learning strongly recommend that team-building or skill-building activities designed to develop the pro-social behaviors necessary for cooperation as well as some specific skills for elaborated discourse take place prior to groupwork. Or, adapting techniques from group dynamics, they suggest that

groups become aware of their interpersonal and work processes as they work and take time to discuss how they are doing as a group. Available research on the effectiveness of such strategies suggests that investing in such preparation and time spent on group process can definitely make for more productive groups. However, the research shows that in order to be effective, the behaviors taught must not only be specific, but they should be directly relevant to the desired behaviors in the particular tasks that the teacher has assigned to the groups.

Unsettled Issues

Two particular issues remain unsettled. First is the question of the necessity for special curricula for cooperative learning. If, as many developers believe, this is a necessity, there are further questions on the changes in the curriculum needed. Second, the optimal means of assessment of students in cooperative learning has not been studied extensively. Should there be group or individual examinations? Conventional tests are still appropriate for certain outcomes of small groupwork, but not all.

Organizational Support and Staff Development

The implementation of sophisticated cooperative learning models have major implications for staff development, for the ways in which teachers work together and for the principal's role. Researchers have concluded that teachers require significant support in their classrooms from staff developers, from the principal and from their colleagues if implementation is to be significant and sustained. From a research perspective, we know next to nothing about how well teachers implement the simple strategies typically taught in short-term workshops.

Evaluation of more extensive staff development programs suggest that longer preparation is more effective in helping teachers to implement cooperative learning. Moreover, even with the most sophisticated and lengthy programs, a significant number of teachers fail to implement. There is also evidence that workshops that place emphasis on the theoretical and research underpinnings of specific instructional strategies can be very effective, provided that teachers really grasp the theory. A fundamental understanding of the underlying theory permits teachers to move away from traditional roles of direct supervision and to take on new and more challenging teacher behaviors. This is especially critical when there is a stress on conceptual learning and higher-order thinking and tasks which involve considerable uncertainty from the students' point of view.

It is very difficult to provide effective feedback to teachers without direct observations of their classes and face-to-face meetings.[13] Teachers who received up to three feedback sessions from developers were much more successful in their implementation than teachers who received fewer sessions.[14] Peer coaching in the first year does not appear to provide evaluations for teachers that are seen as soundly based as those received from staff developers. However, after the first year, there is evidence for the effectiveness of peer coaching when the peer coaches have good preparation for making observations and providing specific feedback.

Finally, several school features contribute to the likely success and extent of cooperative learning in a given school. Principals who have effective managerial skill in obtaining and coordinating resources, such as adequate space and planning time have better classroom implementation than less skilled principals. In addition, effective implementation in the classroom is associated with principals who provide instructional leadership by setting high expectations that teachers will follow through after the initial workshop.◆

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A Staff Development Perspective: **Patty Swanson**

Staff development expert: Patty Swanson

Some say that behind every successful implementation strategy is a driving force. Meet Patty Swanson, staff developer for the Program for Complex Instruction (CI), a tall, bushy-haired blonde who brightens at the phrase "teacher education." Her current research in preservice training investigates how teacher understanding of the theoretical concepts behind instruction enhances classroom practice. She uses a similar philosophy during the summer workshops designed to introduce practicing teachers to this method of small group work.

"The first week is devoted to the theory behind the program, although every idea is tied to an application. We try to model each lesson on a CI format: introduce key ideas, interact in a group work activity or problem-solving task, then pull it all together in a wrap up. We cover positive teacher-to-student interaction and also teach the teachers to critically assist one another and work as a team.

"The second week is practicum. Kids from all over the area are brought into a classroom. The teacher's interactions with the students are videotaped and discussed in feedback sessions."

The use of video may be changing staff development. Videotaped sessions allow teachers to focus on interactions which otherwise vanish in the blink of an eye. "Video is the best teaching tool to analyze the situation. You can do what you can never do in a classroom, you can press 'PAUSE,' and stop to talk.

"I believe very strongly that teaching is a problem-solving process. You have to think about choices every time you open your mouth: What does it buy you? What do you pay for it? Video feedback shows them some of the more sophisticated elements."

Two types of videos are used in the summer seminar. Videos made during the seminar allow teachers to analyze their own teaching, while professional training videos model desired behaviors, like "status treatments." Swanson explains the term: "Status differences naturally happen in any group of people. We think that such hierarchies get in the way of all kids learning. What we try to do is broaden the notions of what kinds of intellectual contributions count in a classroom. The broader the array of offerings, the more people can contribute something that counts, this in turns breaks down the hierarchy that excludes people. So, a status treatment is a means of acknowledging and convincing kids that many abilities count in the classroom."

"Video is the best teaching tool to analyze the situation. You can do what you can never do in a classroom, you can press 'PAUSE,' and stop to talk."

Swanson is determined to explain the importance of status treatments for teachers since research shows unequivocally that students who interact more learn more. "The kids who are more highly esteemed academically are going to talk more and they are going to learn more. We try to boost the participation of low status students. If you don't think I can give anything to a task, you're probably not going to let my idea influence it, or even talk to me. When I talk less, I learn less."

Status treatments were designed to change students' — and perhaps society's — perceptions of what it means to be smart. Once you widen the perception, students can have success in many more areas. For the teacher, identifying multiple talents takes skill.

"It's an intellectual challenge to see multiple abilities. One because you have to figure out what abilities might manifest themselves in a particular task. Two, you have to talk to students about them, literally translate them. You can't say, 'You have visual/spacial ability.' That won't work. You have to ground it in the task, talk about an ability they can carry away with them. And that is intellectual. And then you cannot be constrained by our current view of academic intelligence."

Status treatments were designed to change students'–and perhaps society's–perceptions of what it means to be smart.

A former teacher who used Complex Instruction for four years in a bilingual elementary school, Swanson is careful to caution teachers not to limit student contributions by labeling them as being talented in only one area. "The teacher may point out that a child has shown strong 'artistic ability,' but that doesn't mean that the child should be always doing the artwork in the group. I want them reading, writing, and discussing too. We're not talking about a division of labor. I use multiple abilities to help students get access to the group activity, not to peg them as only being good at one thing."

In addition, the teacher should not leave the decision of which roles children perform to the group. "Using roles is one way that students get access." In CI, students never change roles on their own. "Switching roles is a way that students get axed. It's a fundamental rule of CI that there is no student negotiation to switch roles. If there were, then the kids with low academic status would never get to be the writer, and the kids who are less powerful would never get to be facilitator."

Can't students gain access by developing social skills? Not entirely, Swanson emphasizes. "It's not okay for kids to just be nice to each other. And this is why I say our priority is not on social skills. I want them all interacting with a task — and with each other. Being nice isn't going to do anything for a child who has been nice to but can't get a word in edgewise and can't get into the task. He isn't experiencing anything in terms of learning. The child has to have access to critical thinking skills.

"To put it simply I would say we are concerned with children grappling with big ideas, learning to generalize, learning to think. Our curriculum is always organized around central themes, and we try to make problems open-ended to get students to generalize and grapple with basic concepts."

Staff developers can't teach concepts such as these in a one day workshop, says Swanson. "In the most crass sense of the word, a one day workshop is a great way to make money. I've done it. It keeps me happy all the way to the bank. But it's not the way to do staff development. Teaching is hard. You can't make things substantially better for anybody in one day. You can heighten their awareness to issues, and we do that. I feel okay about doing that. But if you really want to see classrooms change, get ready to include presentations, problem solving with teachers and follow-up in the classroom. And if you aren't willing to give follow-up in the classroom, in my book, don't expect to see classroom change."

Including principals in the workshops is one way to ensure change in a building. "When we get a principal who goes through the training, that puts someone in the system who knows what is going on, who knows how to support the teachers. We always try to get principals here for at least a few days of the seminar, particularly for status treatments or the day for school team meetings. The better conceptual understanding a principal has, the stronger the principal's legitimacy as an instructional leader. The more support the teachers feel."

CI is only available to teachers from schools with certain organizational features, including a supportive principal, staff planning time, and a commitment to detrack, Swanson points out. "As soon as you have less homogeneous grouping in your classroom you've got a much tougher instructional situation. Our strategies work best in heterogenous classrooms."

"Using roles is one way that students get access." In CI, students never change roles on their own. "Switching roles is a way that students get axed.

In addition to strategies for status, the Program has developed curricular materials for small groups in some California middle schools. (See page 11 for a sample unit on the Crusades.)

How often is it appropriate to use the rather complicated process of CI? "It would depend on what I wanted to teach. If the task is conceptually difficult and I have time to structure it, it's a good time to do CI. I would not do radical classroom restructuring for memorizing. I'd teach it rote, or have kids work in pairs. If the task is simple, there are a lot of other ways to manage the class that are easier and just as effective. If I'm teaching multiplication tables, I don't think group work buys me what it's worth. If I'm trying to figure out what multiplication means, group work would be fine."

The most adaptive classroom has some groups and some pairs and some whole class. "What this is, is a wonderful, strong strategy to add to your repertoire of teaching strategies." ◆

continued from page 3

grade teacher, is engaged in a concerted effort to train these lower and middle class students of mixed ethnicity through the use of small groups, and he's willing to prepare a new curriculum to do it. The student achievement is not just their reward, but his too.

However, the students also seem to prefer small groups. "Like my social studies class last year," one student explains, "the teacher kept talking and talking and I didn't learn anything actually. And now I'm actually learning something about the constitution."

Class starts with Compton front and center, in classic teaching pose. He's tall, and stands patiently before a spacious room with a snug semi-circle of chairs in three rows. The bulk of the room sports several tables for groups. His resonant, halting voice, developed over 22 years in the teaching trenches, settles the bunch at once.

To begin, Compton commends one student, Binh, by reframing an ordinary exercise as an accomplishment.

> *We got this homework turned in, Binh's drawings and also the use of magazines to represent the 10 amendments. It takes a great deal of ability to be able to know that you can extend the value of your representation — maybe you can't draw it — but you can find an appropriate picture. That takes a lot of skill, to use a visual that represents an amendment. I'm real proud of this student.*

This introduction works as a "status treatment." A public acknowledgement of Binh's efforts, whether openly before class or quietly during group time, elevates Binh's status in his peers' eyes, and his own as well. When the teacher bombards a class with praise for achievements other than academics — what staff developers at Stanford call "different ways of being smart" — more students participate more often. Their effort is rewarded.

Take Compton's last assignment, a colonial travel brochure. Each group researched its colony's official seal, advantages for settlers, hardships endured, and list of products. Students presented these—some used skits. Or consider a revolutionary newspaper, which challenged students to write an investigative story, create advertisements, draw editorial cartoons, and develop an advice column. Such activities draw out multiple abilities and broaden the definition of achievement. The more abilities a task requires, the greater the potential for participation, the better the chance for learning.

In essence, the Stanford group joins educators in the company of Gardner and others redefining intelligence, and with it, trying to revolutionize the way classes work. (The Stanford program has created curricular units with multiple activities designed to tap students' multiple abilities. See sidebar for a sample lesson on the Crusades.)

"I've got kids that if I were to teach this class traditionally—read the book, answer these questions, write an essay, take a test—would die," says Compton. "This would be their worst, most awful class. I have a lot of kids say that they love coming here, because groupwork allows them to participate and contribute. Once these students have gone through several different tasks, you know they know this material. You know they'll get at least 80% on the test."

In CI, children should be held accountable for learning through exams and individual reports, according to CI's founder Elizabeth Cohen. Exams, which require students to deal with concepts covered in groupwork, should be graded. Individual reports can provide sufficient feedback through written comments, without a grade. Cohen maintains that groups should never receive a group grade. "Teachers don't need to use grades as a club. They need to concentrate on how to motivate children with tasks that suck them in."

We travel an hour north to see a class at Riverview Middle School. A sprawling, multi-winged building in San Francisco's east bay is home to Diane Kepner's one-hundred-and-forty-minute-long core class, an amalgam of language arts, reading, and social studies subjects for a heterogeneous roomful of 30 seventh graders—the school composition is 45% white, 25% Hispanic, 16% black, 7% Asian, and 7% other. The nasal buzzer that starts school matches the dreary building of 1956 which saw better days as a high school. In class, students scuttle spiritedly past towering posters of African tribes hanging next to the signs of a CI class:

> ***You have the right to ask anyone for help. You have the duty to assist anyone who asks.***

This region is offhandedly called "the Appalachia of the Bay Area," says Riverview's principal Marilyn Sipes. "This is a blue collar community, a county unincorporated area. And it's an unusual area because there are no city resources here. We have no library, no theater, no physicians. We don't even have a high school unless kids get on the freeway. Some don't get out of the community, physically don't make it over the hill to high school. Because of the lack of parent support, they don't have transportation. And, they don't have the mind set."

When parents do visit, they complain. Changes in instruction and content puzzle them, says Sipes, who in three years drafted reform that has enhanced student performance at her school. She introduced CI to her staff and attended training workshops with them. Parents still "gripe: 'That isn't the way we used to do it. If it was good enough for us, it's good enough for my kids.' But, I take out the state guidelines and show them where we are going."

SAMPLE UNIT ON THE CRUSADES

Activity 1	Activity 2	Activity 3	Activity 4	Activity 5	Activity 6
CRUSADER CASTLE	**CRUSADER HANDBOOK**	**CRUSADER SONG**	**PRIEST DIARY**	**EYEWITNESS ACCOUNT**	**EYEWITNESS ACCOUNT**
Skill: Analyze pictures and floor plans of a Crusader's castle. **Task:** Build a model of a castle.	**Skill:** Examine pictures of the enemy. **Task:** Dramatize a priest recruiting men to join the Crusades.	**Skill:** Analyze the lyrics and music of a song from the period telling how King Louis recruited men for his crusade. **Task:** Compose a song that tells the story of an important current event.	**Skill:** Analyze a monk's text (primary source). **Task:** Design an advertising campaign for Pope Urban II.	**Skill:** Analyze a primary source text recounting the siege, attack and capture of Jerusalem. **Task:** Design a mural depicting the main events described in the text.	**Skill:** Examine a primary source text that recounts the Jerusalem siege from the Arab's point of view. **Task:** Create a skit dramatizing a few survivors from the siege as they narrate the attack for other Arabs.

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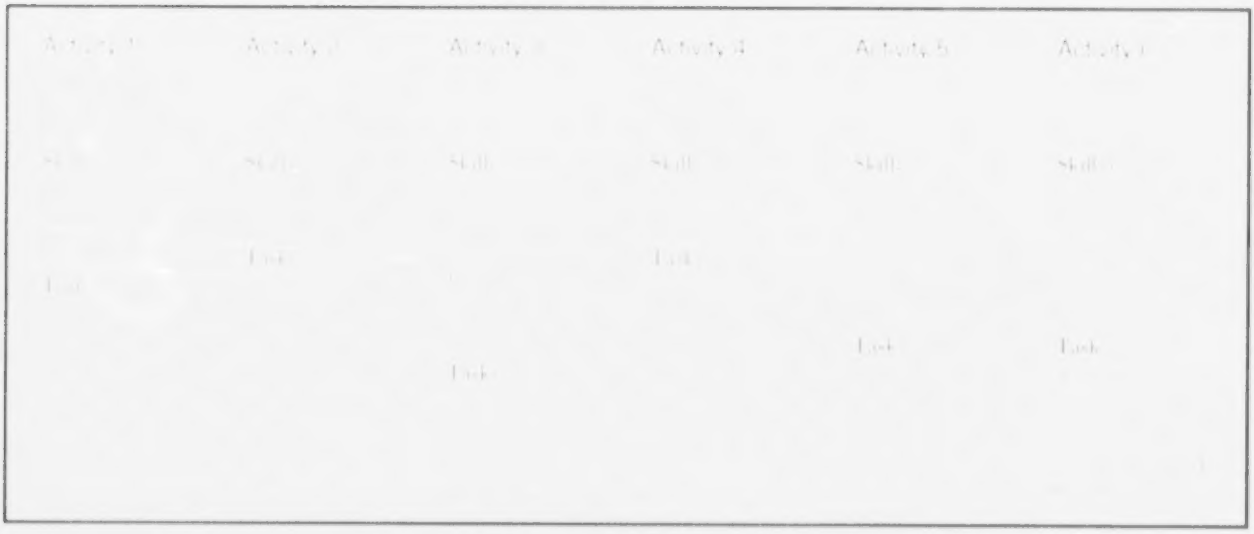
"How do historians know about the Crusades?" the teacher asks. Indeed, "How do we know about our past?" the student may wonder. These questions form the central theme for a sample unit from the teachers' manual for Complex Instruction, geared to stimulate higher order thinking through interactions in small groups. The following selection of group activities and projects illustrate the kinds of activities that engage students. Each group completes two or three kinds of creative activities, a textual, an artistic, a musical. The activities are designed to encourage students to use a variety of abilities.

This unit on the Crusades, like seven other social studies units developed thus far, includes a central theme (see above), several activities that encourage higher order thinking, and projects which require multiple abilities.



In order to spark higher order thinking, each activity has a list of sample questions. Here are some questions teachers ask the castle builders.

- Why would the Crusaders build a castle?
- What does the architecture of this castle (the floor plan and interior/exterior structures) tell you about how warfare was conducted in medieval times?
- If you lived inside this castle, how would you defend it against enemy attacks?
- If you were an enemy invader, how would you plan your attack of this castle?
- What do you think were the roles of men and women inside the castle? What were the roles of children?

Higher order thinking is further reinforced as the teacher pushes groups to connect their group work to a historical context. The following extension questions for illustrate the way teachers can prod and probe the group thinking.

- Describe how life is different for people living in a castle under siege and those who are attacking the castle.
- Who are the descendants of the Crusaders' enemies? Where do they live now?
- How do leaders and governments use propaganda in times of war?
- What sorts of promises does this song make to those who join the Crusade? What kind of promises do leaders today make to those who go to war?

Students complete two or three activities during any CI unit. By the time these are completed, CI designers expect students togain an appreciation of the interrelationships of past events and to relate those impressions to the present. Students emerge with the "big picture."◆

themselves. Research shows that as student interaction increases, learning gains increase. Then Compton steps back and listens.

–Remember there is an amendment that says you can't be pushed around?

–That's the fifth amendment.

–I told you guys. (Jose again) *When he put his head down he had the right to remain silent.*

–So it was five.

Compton steps in. "Jose has noticed an important detail, when he said the man had his head down and had the right to remain silent." Compton assigns competence to Jose. "He's on the right track. He has a good eye for details, and using those details as clues for finding the right amendment."

When Compton, who is a powerful source of evaluation, tells the group that Jose is smart, he begins the process of changing the groups' expectations for Jose.

Develop student responsibility for each others' performance and learning

Today, Ms. Kepner's groups summarize information on different African cultures, then they present to the class. Last week, groups queried each other on details, now she wants them to stretch their thinking. This week, the teacher designs a lesson so the class will confront the big picture before next week's African dilemma tales. First the ground rules:

You'll be evaluated on two things today. One is process. Are you all working on task? Two is how thoroughly you are digging into the information. You have to interpret, analyze, take information and apply it in new ways.

In this cluster of mixed socioeconomic status—45 percent on free and reduced lunch—absences are common, today some students must regroup. New group members must examine a culture different from the one they studied the week before.

A group visit

A new member slows one group's progress; four boys kibbutz around. Instead of opening up their books, they have piled them high in stacks. A typical time to say, "Get to work"? Not for Kepner. She moves breezily over, pauses, and asks in a lilting voice, "What happens when you put up walls? Why did people put up walls in the first place? It looks like you are trying to remove yourself from the group. Why aren't you participating? I'd like to hear."

There's a pattern to timing a group visit such as this. The teacher's interchange is quick, barely long enough for students to answer pointed questions—they do explain why people use walls. There is no criticism from Kepner, only direction to the very next step. She says, "If you use each other as a resource, you won't need to ask me questions;" it's an oft repeated suggestion, a sort of class mantra whose message is: Work interdependently. You're capable.

Another group is to discuss "the impact that Mansa Musa's conversion to Islam had on Mali's people." Although the textbook has no sequence of words that corresponds to the question directly, the group diligently hunts for one. Nicole reads aloud. She misreads "conversion" as "conversation," and the others lack seventh grade reading level to correct her. A search for quotes provokes many long, intense discussions about what certain quotations might mean to the Mali people. Frustration is rising; the following exchange is tense.

–You have to record, take notes. I'm harmonizer. I make sure everyone is being nice to each other.

–We have to read.

(They get themselves on task, and reread the same sections again and again.)

–What does the word impact mean?

–Impact. I impact my hand into Joey's head.

(No one is impressed.)

After unflagging effort, the realization strikes: they're getting nowhere. The group collapse is audible. Nicole, now humped over her desk, announces a migraine. Soon they settle on and write a sentence, which, if not exactly right holds key words, "...conversions increased mainly due to Mali's expanding markets."

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Ms. Kepner maneuvers in with quiet purpose and squats to eye level: "Think about what's the cause and what's the effect. What do we mean by that?" She's like a bird proffering a bit of a worm to a chick and darting away. Here, Kepner clarifies the next task, then drives her charges to take responsibility afresh, delegates authority from herself, then leaves.

The difficulty this group has underscores the need for heterogeneous clustering. Were some children at the appropriate reading level, all would have been able to contribute ideas to the discussion. But with no group member able to interpret a key word in the task, students can make little progress.

Can teachers rely on children to explain ideas to each other? Is the art of teaching lost?

"If anything it is used more," Kepner asserts. "Because now my job is to keep an ear open and determine when I can step in, give them a little piece and step out of the way. That's the real teaching skill. It's a skill I haven't used until now. It has redefined my role, probably in a way that is more healthy. Even lecturing is different. I am more likely to look for cues from them. I am more likely to ask a question and get them to start a discussion in the room."

Promoting higher order thinking

Compton encourages higher order thinking through explicit reinforcement at the close of the day's lesson:

> *I saw a lot of multiple abilities taking place. I heard people discussing, giving opinions, and giving information. I heard people debating: "I think it means this." Somebody said, "No! I think it means this!" Then somebody took out the amendments, and said, "How can we justify this?" One that I was real proud of Elizabeth. She had to keep thinking, who lives on a military base? The soldiers. If they are living there where aren't they living? That's the quartering act! Please be willing to give information. Your idea might be the one that unlocks the problem. Now, how does the quartering act affect us today?*

If Compton's compliments are predictable, students receive them as unexpected. In today's task, pictures were ambiguous enough to force students to grapple with the amendments. "They will have a visual reference," says Compton. "I am astounded at how much they can recall when we use this procedure. We're concept oriented. Why people did what they did. Why did the Bill of Rights work, or why doesn't it. How do they affect your life now? We have to bring it to the present, we can't leave it in the past."

The teacher's wrap up is critical for connecting the different group activities—through questions and provoking discussion. The wrap up requires that teachers be able to summarize students' conversations spontaneously, that they have a fundamental grasp of the concepts, and the relationship of activities to the concepts. Some teachers begin the next day's lesson with a wrap up as an introduction. This gives them more time to contemplate the connections.

What is it like overseeing these groups?

Kepner responds: "If I am going to be an effective resource, I have to switch my train of thought from one topic to another very quickly. I have to know what six or seven groups are doing, and I have to field questions and direct inquiry on those topics at once. This group may need someone to intervene to settle an interpersonal problem, this one is ready for the next challenging level, this group needs status stuff. And I have to keep thinking in my head to be knowledgeable about the content of each of those groups."

If the process is taxing, it's also rewarding. "It is very satisfying to see kids come along. I know that it's best for them in the learning process. That's what is rewarding, seeing them make that growth."

Yes, some students are advancing their thinking. But some aren't reading. Is higher order thinking pursued at the expense of basic skills?

"I think there is a danger of that," concedes Kepner. "I don't know if I see a lot of successful (basic) skills without the higher order skills. It's a real dilemma because it rests so much on the individual motivation of the kids, on what turns on inside. That 'Aha!' We shouldn't give kids false security: 'It's okay. I don't really need to learn to read and write.' But I don't know for some of these kids if I could get them to read or write better anyway."

Note that Kepner uses other strategies to teach reading and writing. "CI is the best strategy I've found to supplement my more traditional forms of instruction. It fits in with other teaching styles. I may do groupwork two days a week and then not at all the next week. It's not a whole program, it's not intended to be." Cooperative learning is one more tool in the teacher's storehouse.

Summary

In the schools we visited, the teachers say that CI has demonstrated success with low status students who may otherwise fail in school. They believe the method rewards both low and high status students by drawing on their many talents, and by making them responsible to direct their own learning. It rewards the teachers with a classroom management technique which frees teachers to focus on their subject matter. And, it rewards principals since discipline problems decrease as academic involvement increases.

For Compton, CI has made man-

aging the classroom easier. "Once you have cloaked the curriculum you want to cover in this format, it will take less time, and your stress level is going to go down. Students take charge of the trivial, exasperating procedures, like handing out papers, scissors and tasks, and the most critical operations, too, through roles like the facilitator who makes sure everyone participates in the discussion." CI's founder, Cohen, agrees that the class management system is often the first advantage hailed by teachers.

Since everybody has a job—a role—everyone is involved. The operative buzz word in the CI materials is "access." Access becomes involvement. Research shows that involved students learn.

Jessica, a pert, articulate blonde student agrees, "It's easier to learn (the material) when you're doing a project than when the teachers are explaining it to you. I just like being more involved in the class. You get to talk more. You have more freedom."

Students are given more responsibility and speak of having freedom. In such a way, freedom and responsibility are always linked. And, while it is difficult to gauge success on a day to day basis, staff at Riverview which implemented CI last year in the seventh grade see signs of progress. "Seriously, we see it in eighth grade this year," says Kepner. "The kids are doing beautifully now."

Riverview principal Sipes concurs. "You can see the benefits on the playground, the kids interact better."

Principal support is critical for the method's success. The team from Stanford will train teams of teachers only from those schools with a supportive principal. One demonstration of support is scheduled planning time. At Riverview, Principal Sipes revamped the school schedule to designate Wednesday for teacher collaboration. Students leave early Wednesday and stay longer every other day. At Steinbeck, interdisciplinary teams of language arts, math, science, and social studies have begun joint projects throughout the school. One framed newspaper article at the school touts a school-wide effort to recreate a day during the revolutionary war. Students costumed themselves, did skits, arts, crafts, and juggling.

The intensive staff development is costly. Stanford's two week summer workshop and the year long, on-site follow up runs about $2,000 per teacher. But despite California's financial problems, the Program for Complex Instruction is slowly expanding. Eight universities in the California system now train in CI. Georgia and New Jersey have begun educating teachers, and the method is being practiced abroad in Holland and Israel.

The educational crusade for classroom improvement hopes to persuade people to use small groups, no one need choose between large and small groupwork–there's room for many strategies. But, well-designed small groups have a proven track record, and whether cooperative groups are used for basic skills, social skills, or higher order thinking, they promise educational rewards beyond what is available in the large classroom.◆

by Karen Prager

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Teachers are encouraged to identify the multiple abilities students use within groups. The following examples, a "cheat sheet" of sorts, help teachers expand their awareness of the kinds of abilities needed for conceptual projects.

Visual/Spacial Abilities:
- imagining a three-dimensional object from a two-dimensional picture
- grasping the message of a picture
- planning ahead, anticipating stages of construction
- using mechanical in genuity

Musical Abilities:
- distinguishing between the different sounds instruments make
- hearing or creating rhythmic patterns
- hearing or creating melodies
- adding lyrics to music

Understanding and Analyzing Primary Source Text:
- being empathetic or understanding how others might have felt
- understanding how texts fit into the big picture
- detecting sources of bias in a text
- translating the message of the text into other forms, e.g. a mural

Dramatic Abilities:
- being expressive with gestures and movements
- having vocal control
- being able to translate a written character into a performance
- being able to build tension
- being able to memorize

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